Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

REBRICK – Rödmix & Gulmix

from

BRUKSPECIALISTEN i Sverige AB

BRUKSPECIALISTEN

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-07558
Publication date:	2023-10-30
Revision date:	2023-10-25 (Version 2.0)
Valid until:	2028-10-29

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): *Construction products, 2019:14, Version 1.3.1*
PCR review was conducted by: *The Technical Committee of the International EPD® System. Claudia A. Peña. Contact via info@environdec.com*
Life Cycle Assessment (LCA)
LCA accountability: *Fanni Végvári, CarbonZero AB*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: *Vladimír Kočí, LCA Studio, Czech Republic* Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:
Brukspecialisten i Sverige AB

Contact:
Carl Hansson, carl.hannsson@brukspecialisten.se

Description of the organisation:
Brukspecialisten is a building material supplier of bricks and mortars with a circular approach focusing on preserving and reusing our products.

Product-related or management system-related certifications:
ISO-14001

Name and location of production site(s):
Tegelmöllan AB

Product information

Product name:
Rebrick Rödmix (red mix) & Rebrick Gulmix (yellow mix)

Product identification:
According to EAD 170005-00-0305, ETA 21/0535 of 23/07/2022

Product description:
Reused bricks, with CE-approval and frost guarantee used for protected or unprotected masonry structure e.g. facing and rendered masonry in self-supporting load transferring masonry structures, including external veneer walls, internal linings and partitions. The products are upcycled from demolition bricks that otherwise would end up as building waste.

UN CPC code:
BK04 01102 Tegel

Geographical scope:
Demolition bricks are collected within Sweden and with an average transporting distance of 150 km. The reused and cleansed bricks are then sold within Sweden.

LCA information

Functional unit / declared unit:
One (1) tonne of re-used bricks.

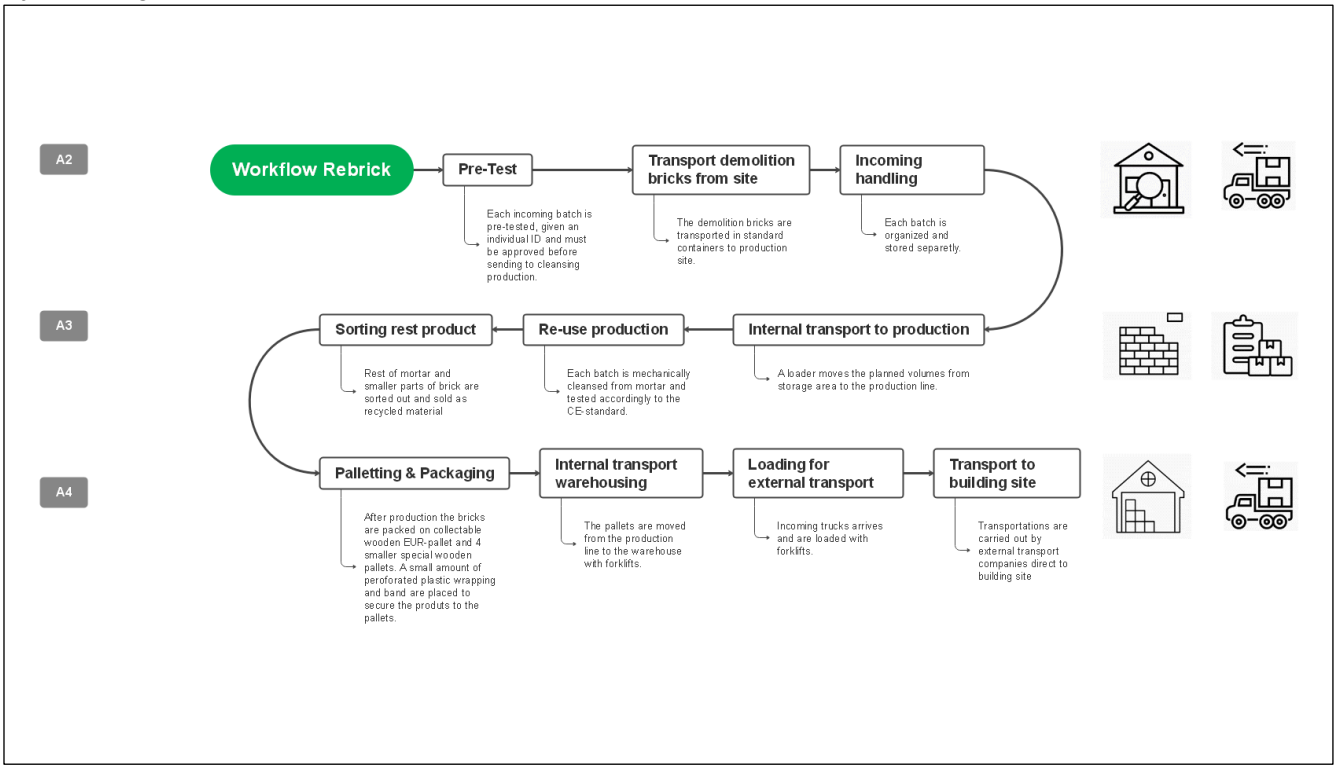
Reference service life:
150 years. RSL is based on the cPCR for clay construction products: “For clay construction products, the RSL is 150 years. Studies have shown that clay construction products stand out with their high durability and prevail with no maintenance and a life span of 150 years or more”.

Time representativeness:
The data is represented for the year of 2022.

Database(s) and LCA software used:
LCA for Experts (v.10.7.1.28) with an integrated Ecoinvent database v.3.8.

Description of system boundaries:
Cradle to grave and module D (A + B + C + D).

System diagram:



More information:

A1, raw material supply
This module considers the extraction and processing of all raw materials, energy, and transportation which occur upstream to the studied manufacturing process (except for ancillary material used in product manufacturing process).

A2, transport to the manufacturer
The raw materials are transported to the manufacturing site. This also includes additives and packaging.

A3, manufacturing
This module includes manufacturing of re-used bricks, including packaging material.

A4, Transport
Transportation from Brukspecialisten to the construction site is taken into account, and is calculated based upon an average distance of 150 km. This distance may differ between same kind of products within the same PCR.

A5, Construction installation

This stage includes any resources used during the installation of the product on the construction site. Treatment of the packaging waste on-site is considered.

B1-B7 Use phase

This stage includes no activities or emissions related to the product.

C1 Deconstruction/Demolition

This stage includes the de-construction and/or demolition of the re-used bricks.

C2 Transport

Transport distance to waste processing.

C3 Waste processing

This stage includes any waste treatment needed.

C4 Final disposal

This includes any material that is landfilled.

D Benefits and loads beyond the system boundary

Emission credits are obtained from energy recovery and recycling of waste materials. In energy recovery, it is assumed that heat and electricity from waste incineration substitute thermal energy from natural gas and average Swedish electricity grid mix, respectively.

Omissions of life cycle stages

The following flows were excluded from the system boundary:

- A1-A3: The plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the potential environmental impacts through the life cycle of the product.

In addition, the following flows are excluded from the system boundaries:

- Flows related to human activities, such as employee transport.

Cut-off criteria

The following procedures were followed for the exclusion of inputs and output.

- All input and output flows in a unit process were considered i.e., taking into account the value of all flows in the unit process and the corresponding LCI where data was available.
- Data gaps were filled by conservative assumptions with average or generic data. Any assumptions in such cases were documented.
- The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%).

All hazardous and toxic materials and substances are included in the inventory and the cut-off rules do not apply.

Geographic scope

This EPD centers around the production and manufacturing process of re-used bricks in Sweden.

Allocation

Allocation criteria are based on economic allocation and effect the modules A2 and A3.

LCA: Scenarios and additional technical information

TRANSPORT FROM THE PRODUCTION PLACE TO THE USER (A4)

Transportation model

Transportation type	Capacity utilisation (incl. return) %	Type of vehicle	Distance (km)	Fuel/Energy consumption
Truck	61%	Truck-trailer, Euro 5, 50 - 60t gross weight / 40.6t payload capacity	150	1,95 l/tkm diesel

Fuel type used

Fuel type	Database	Regional coverage	Time reference
EU 28: Diesel mix (6,35% bio-content)	Sphera	EU	2017

END OF LIFE (C2-C4)

Transport distance to waste processing (C2)

Transportation type	Capacity utilisation (incl. return) %	Type of vehicle	Distance (km)	Fuel/Energy consumption
Truck	61%	Average truck trailer with a 27 t payload	50	1,95 l/tkm

Waste treatment and disposal rates (C3-C4)

Packaging material	Recycling rate	Incineration rate	Landfill rate
Bricks	95%	0%	5%

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
Specific data used	Specific data is used for module A3			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/ton
Re-used bricks	1000	100	0
TOTAL	**1000**	**100**	**0**
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/ton**
Brick pallet	6,6	0,66	2,739
EU pallet	25	2,5	10,375
PET band	0,124	0,0124	0
Tape	0,028	0,0028	0
Net	0,308	0,0308	0
TOTAL	**32,06**	**3,206**	**13,114**

During the life cycle of the product no hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” has been used in a percentage higher than 0,1% of the weight of the product.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	-2,53E+01	8,08E+00	4,05E+01	0,00E+00	6,09E-01	1,15E-01	0,00E+00	7,17E-01	-9,64E+01
GWP-fossil	kg CO_2 eq.	1,12E+01	8,12E+00	-1,60E-01	0,00E+00	6,12E-01	1,16E-01	0,00E+00	7,40E-01	-9,63E+01
GWP-biogenic	kg CO_2 eq.	-3,65E+01	-1,20E-01	4,07E+01	0,00E+00	-8,30E-03	-1,05E-03	0,00E+00	-2,55E-02	6,79E-02
GWP-luluc	kg CO_2 eq.	3,82E-02	7,53E-02	-5,63E-06	0,00E+00	5,56E-03	7,01E-04	0,00E+00	2,33E-03	-1,27E-01
ODP	kg CFC 11 eq.	1,19E-06	7,12E-13	-1,10E-09	0,00E+00	7,81E-14	2,27E-13	0,00E+00	1,91E-12	-1,64E-10
AP	mol H^+ eq.	7,10E-02	4,81E-02	-3,06E-03	0,00E+00	3,14E-03	1,22E-03	0,00E+00	5,33E-03	-1,86E-01
EP-freshwater	kg P eq.	2,71E-03	2,96E-05	-1,67E-05	0,00E+00	2,19E-06	5,33E-07	0,00E+00	1,51E-06	-8,90E-05
EP-marine	kg N eq.	2,18E-02	2,35E-02	-8,56E-04	0,00E+00	1,47E-03	3,26E-04	0,00E+00	1,38E-03	-6,22E-02
EP-terrestrial	mol N eq.	2,25E-01	2,61E-01	-6,98E-03	0,00E+00	1,63E-02	3,57E-03	0,00E+00	1,51E-02	-6,85E-01
POCP	kg NMVOC eq.	7,52E-02	4,56E-02	-2,45E-03	0,00E+00	4,11E-03	8,81E-04	0,00E+00	4,15E-03	-1,72E-01
ADP-minerals&metals*	kg Sb eq.	9,63E-05	5,28E-07	-5,25E-06	0,00E+00	3,98E-08	1,19E-08	0,00E+00	3,47E-08	-3,47E-05
ADP-fossil*	MJ	1,98E+02	1,11E+02	-1,69E+01	0,00E+00	8,18E+00	2,64E+00	0,00E+00	1,00E+01	-5,95E+02

WDP*	m^3	7,53E+00	9,37E-02	-1,86E-01	0,00E+00	7,25E-03	1,08E-02	0,00E+00	8,25E-02	-7,72E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	2,57E+01	8,22E+00	-1,43E-01	0,00E+00	6,19E-01	1,17E-01	0,00E+00	7,45E-01	-9,66E+01
GWP-total[2]	kg CO_2 eq.	-1,16E+01	7,96E+00	4,06E+01	0,00E+00	6,00E-01	1,14E-01	0,00E+00	7,10E-01	-9,60E+01

Resource use indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	6,76E+02	7,82E+00	-2,02E+00	0,00E+00	5,95E-01	1,22E+00	0,00E+00	1,63E+00	-1,24E+02
PERM	MJ	2,84E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.
[2] This indicator supports comparability with EPDs based on the previous version of EN 15804 (EN 15804:2012+A1:2013).

PERT	MJ	7,05E+02	7,82E+00	-2,02E+00	0,00E+00	5,95E-01	1,22E+00	0,00E+00	1,63E+00	-1,24E+02
PENRE	MJ	3,92E+02	1,11E+02	-1,71E+01	0,00E+00	8,21E+00	2,65E+00	0,00E+00	1,00E+01	-5,96E+02
PENRM	MJ	4,14E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	3,92E+02	1,11E+02	-1,71E+01	0,00E+00	8,21E+00	2,65E+00	0,00E+00	1,00E+01	-5,96E+02
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,65E-01	8,62E-03	-6,72E-03	0,00E+00	6,52E-04	1,74E-03	0,00E+00	2,53E-03	-2,38E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

Waste indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	-1,12E-08	4,10E-10	4,65E-11	0,00E+00	2,54E-11	-2,37E-10	0,00E+00	2,18E-10	1,08E-08
Non-hazardous waste disposed	kg	6,27E-02	1,60E-02	7,18E-02	0,00E+00	1,25E-03	1,67E-03	0,00E+00	5,00E+01	-3,43E+01

Radioactive waste disposed	kg	4,41E-04	1,43E-04	-7,41E-04	0,00E+00	1,54E-05	4,35E-04	0,00E+00	1,14E-04	-2,95E-02

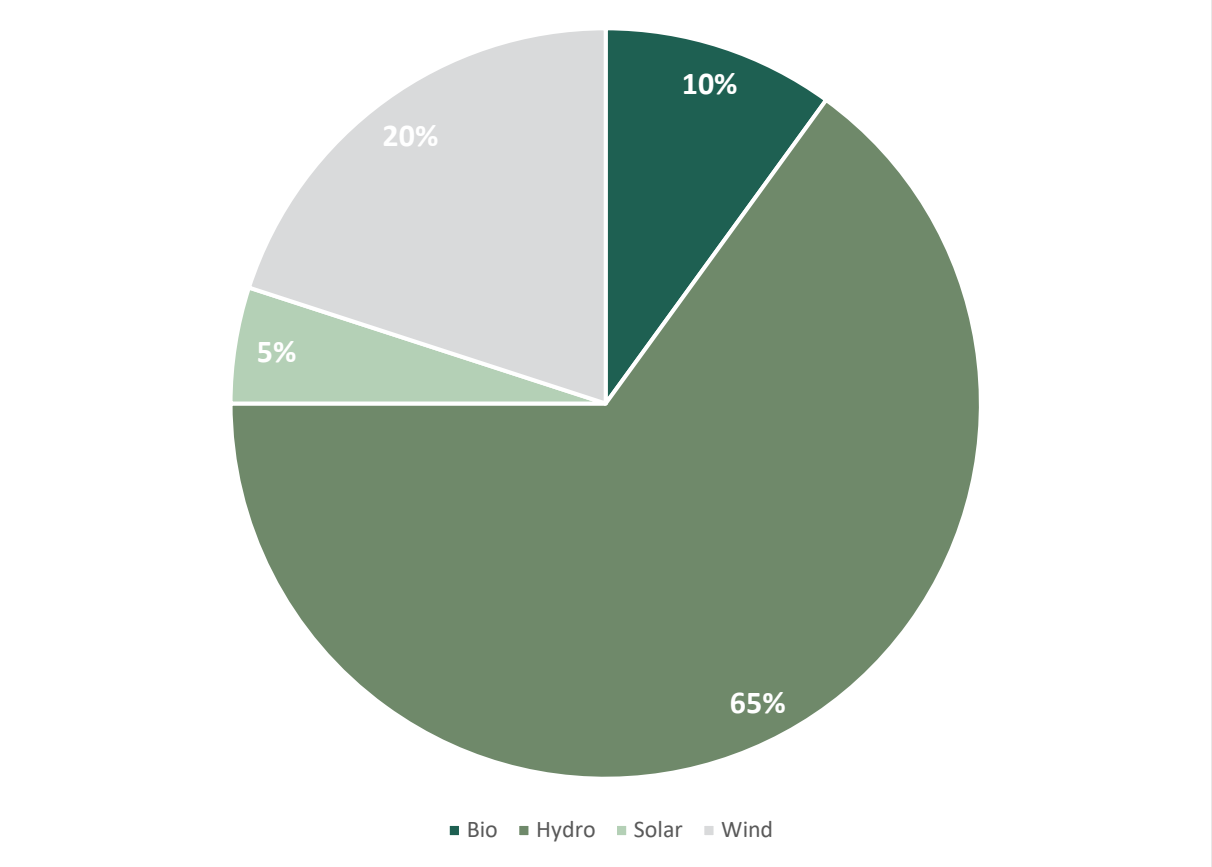
Output flow indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1-B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	2,84E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	2,28E-01	0,00E+00	0,00E+00	0,00E+00	8,55E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	-1,49E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	-2,65E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional environmental information

Greenhouse gas emission from the use of electricity in the manufacturing phase.

Electricity mix	Value
Location	Sweden
Electricity mix	Bio: 10% Hydro: 65% Solar: 5% Wind: 20%
Reference year	2022



Differences Versus Previous Versions

2023-10-07 Version 1

2023-10-25 Version 2
***New verification**: New indicator added. Edited copy mistakes in results. Validation date has been extended by five years.*

References

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Tiles & Bricks Europe TBE PCR for clay construction products (2014) Guidance document for developing an EPD.

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